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ABSTRACT

Many of the media in current use for language teaching are still in a state of infancy, and teachers need to avoid falling into restricted views of what potentials exist. Broadcast media are a case in point, where a good deal of renovation is needed and is possible, in, for example, the use of soap operas for teaching English to adults. The video medium is being expanded by tape exchange programs. Computer-assisted instruction is another medium being severely restricted by its stereotype, yet in some programs it allows students extreme flexibility in self-pacing of materials. Both positive and negative stereotypes of computer-assisted instruction exist. Similarities exist between the tutorial function of computer-assisted programs and that of audiotape programs. This indicates that costing and scale of programs need closer coordination with instructional goals in order to avoid Big System euphoria. Although motivational drawbacks have been shown in the individualized use of media, better sectioning of classes may alleviate this. The advantages of increasing the available time, depth, and scope of learning for the students' mastery of material seem to justify the inclusion of self-study modules in language teaching media. (Author)

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Stereotypes in Media

or

How to Avoid Functional Fixedness

James Heaton

About a year ago, I saw for the first time a demonstration of the use of a computer to aid in the teaching of English. Print and graphic material was presented to the student via a display panel about a foot square on a terminal device about the size of a large portable T.V. The image, in orange lines against a black background, bore little resemblance to the usual impression of a television picture. Resolution was very fine, so that ordinary book-sized print and punctuation could easily be read from the panel face. The image was bright enough to read under ordinary room illumination and was free of any flicker or visual noise. Each "page" of material was written rapidly across the panel; the cartoon-style illustrations were "drawn" section by section. Once you had responded to a displayed question by typing the answer on a keyboard or by touching the correct point on a displayed picture, new material would be added with a comment ("That's right, Jim! Now try this one..."), or the page erased itself and a new one appeared. The effect was irresistable, and, like Mr. Toad, I was hooked by this new device, which could do everything but cook. Its name was PLATO [1], and even its name was awe-inspiring.

At that time I think I had freed myself from one kind of fixation--that computers are only good for computing--only to fall into another--that quality teaching can somehow be equated with discovering the right gadget and devoting yourself to it. But gagets come in many packages, and perhaps this tendency--which psychologists have labeled "functional fixedness"--is parallel to the tendency that many of us in the teaching profession have of total devotion to a single technique in teaching. Maybe we need gadgets as some sort of catalyst to help us restructure our views of classroom processes, but at present we tend to interact with them in a way which may obscure further applications. Moreover, the use of new techniques may also obscure the fundamental issue of what the students need. And, in particular, what they need from us.

Marshall McLuhan recently observed that the world has become a teaching machine--only no one yet knows what to teach. We now have a worldwide network of television and radio information available to us, and every schoolchild comes equipped with a miniature computer which can be secreted in his desk as easily as a forbidden paperback. We can make color pictures in one minute and video pictures instantly. Whatever we choose to draw or photograph, we can magnify 10,000 times on one wall of a room via a projector, or show "in living color" on a video screen. We can record two hours of high fidelity sound on a cassette smaller than a deck of cards using a machine that fits in a coat pocket. Cable television can provide us with information on the weather, up-to-the-second stock market reports, news, supermarket prices, and showings of recent movies. We are faced with more than everything you ever wanted to know about

anything. That's great, but what do we--first as humans and second as language teachers--do about it?

It's easy to ask smug questions about the information explosion and the state of future shock we are all already in. It's more difficult to disentangle ourselves, if only momentarily, from pre-structured perceptions of our various information tools in order to examine whether they are being used as we want them to be. Commercial media are a case in point.

Radio, for example, is music, news, comedy, and maybe a language program or two if you're one of those freaks who tunes to the far left hand side of the F.M. dial late in the morning. But mostly what one encounters is entertainment. At one time--but rarely now, and only on the left side of the dial--there was regularly scheduled serious drama, other spoken literature, lectures, "how to____" programs, and consumer information. I don't mean to denigrate the fact that radio is the purveyer of good (and bad) music, but, for all its power, radio is now characteristically the "background medium", meant to be listened to with one ear. It's the thing you keep in the garage or in the bedroom with a clock attached to it (which also indicates some lack of self-justification). That's the way things are. You'd never want the damn thing in a classroom since it would be a mere distraction--as it is in the garage.

T.V. is different: you have to watch it. It's the distraction par excellence. Even the "snow" on a T.V. screen is hypnotic. Someone has suggested a harmonic relationship between the video picture scan rate and the frequency of brain waves. Whether this relationship really exists or not is immaterial. No one would deny the metaphoric value of such an assertion when they've seen children in a deep trance over the Saturday morning cartoons. We have already seen television develop for 25 years and now know only too well what a medium looks like when it has reached a conceptual dead-end. Would anybody ever want that in a classroom?

One possibility is that we could take the material which now exists on television and recognize it for what it is. After all, aren't soap operas really some kind of cultural commentary--edited, to be sure, but nonetheless a commentary? And doesn't the evening news tell more about the viewer than the viewed. (Why are we so pre-occupied with up-to-the-minute weather reports? Are audiences that way in Ecuador? In China? In Vietnam?) What about advertisements? What do they really communicate about us? How are such institutional aspects of the medium interpreted by someone outside the realm of the L.A. Xerox machine, assuming that such a place or state of mind does exist?

Modes of utilization based on such ethnographic inquiries might serve to de-fixate ourselves into new aspects of the broadcast medium. Ancillary techniques, making use of videotape recording, would lead to still other aspects. Lotte and Alan Marcus are making and using video materials with migrant farmers in Salinas. The materials consist of recorded and edited segments of soap operas. But, rather than being played back as a representation of the original, the medium is altered via several techniques. First, a selected scene is presented to the class as a series of freeze frames

(the effect you get when using the "Pause" function of the VTR) without sound, representing the gestures and facial expressions of crucial moments in the scene. The class uses these data to guess what's going on. The class then views the still frames with the sound associated with those segments of time and considers another layer of meaning:

> What can you tell from his tone of voice? From hers? What are they to each other? What's the problem? [2]

Then the class views the tape with normal action and sound, at which point they are led into discussion of the way people react to one another, by way of soap opera vocabulary:

> "startin' to get to you"
> "you aren't gonna get anywhere"
> "maybe I'm kidding myself"
> "crying with every little sob story" [3]

Explanation is done in both Spanish and English, and the students raise their hands to stop the tape and ask questions at any time. In the process, the students are using the soap opera as a medium of breaking open and looking at some of their own problems in the new language/culture. The typical content of soap operas often encompasses the kinds of bureaucratic entanglements that all too often harry the migrant farmers. These problems, which stem only partly from the migrants' lack of facility in the use of English, can at least be identified and worked with via the classroom/video medium and dealt with further in communication exercises and fieldtrips. Perhaps the soap opera isn't always a soap opera.

Other experiments in video indicate further possibilities for a non-stereotyped anti-medium. Mits Kataoka is continuing to supervise experimental programsin video communication in the UCLA Art Department. These programs consists of videotape exchanges between individuals in various cultural areas. In the videotapes, people talk about their concerns, problems, and livlihoods using words and pictures of their surroundings, schools, transportation, and themselves. In a very personal way they ask and answer questions of the viewer, who is generally in a contrasting culture, perhaps in another country. The tapes are mailed back and forth, and the equipment is provided by the project or by the school, so that the only expense involved is postage. Participants are now active in several areas in Japan, including Kyoto, exchanging with school students in Irvine. Exchanges also are taking place between different parts of Los Angeles. The medium is portable video recording equipment ("portapak") operated by the communicators, who range from about ten years old up through university age. A good deal of incidental language practice takes place in the Kyoto-Irvine exchange, which happens to be in English, as the individuals feel they have someone interesting to talk to. The main purpose of the exchange, it should be noted, is to provide a means for people to learn about each other, and, in some sense, to use each other as information sources for intimately understanding a different life style. The implications for supplementation of ESL courses here are obvious, but one should also note the possibilities <u>beyond</u> language teaching.

The failure of commercial broadcast media to succeed even in their entertainment objective may serve to motivate the exploration of such alternate forms. We, as educators, might be spurred by experimental applications like these to become the creators of an effective medium rather than its victims.

Of all the media stereotypes, the computer is probably the most maligned. In the first place, it is a machine. Moreover, it is a machine which appears to "think". Finally, it only thinks about numbers, and it does so in an automatic sequence called a program. Even though the computer mimics only a minute portion of human brain processes, and does so very poorly, its very machine-like character seems to some people to constitute a Wellsian threat to traditional classroom processes. Nothing important can be taught (they say) without human intervention, and certainly not by a number-crunching device. Even if language practice could be managed by a computer, such practice would be of such limited scope as to be trivial. Programmed instruction is boring and ineffective and CAI (Computer-Assisted Instruction) is merely another form of programmed learning. It's another expensive toy; it isn't "cost effective". Ironic as it may seem, the "Awful Machine" arguments are very often advanced by those teachers who have been teaching the same thing in the same way for most of their careers.

But there are machines and <u>machines.</u>

Others see CAI as a stereotype at the other end of the scale: a learning medium that can do everything and is worth any price. It caters to individual needs by allowing students to branch into the level of difficulty of exercise material that suits them best, with mastery quizzes for each unit. The computer's instant feedback response enables a student to feel reinforced always and to do more with the material than he would otherwise. It can keep files on the progress of all the students, reducing teacher time spent grading exercises. Via easily-learned "authoring languages", it can enable teachers to participate in a direct way with the curriculum development. Finally, (they imply) there is something essentially interesting and motivating about the computer medium which will carry the day, even if the content material is not distinct from the traditional printed textbook.

Some of these negative and positive attitudes toward computerized instruction have been proven true, some have some support in fact, though research data is lacking, and some are still subject to so many conditions and conflicting arguments as to be regarded as mere assertions at this point. The situation, in other words, bears a strong resemblance to that of the language lab a few years back, with all sorts of stereotypes prevailing, depending on the personalities involved with its advocacy.

First of all, we can make a few basic assumptions that are either obvious or have been reasonably well established in practice:

1) The computer is a powerful medium;

2) It is only as flexible, ingenius, and effective as its human programmers have made it;

3) It is really a cluster of media--or a media-handler for print (hard-copy terminal, teletype), cathode-ray tube (CRT) display, video audio, or slides;

4) It is a wide range of devices, ranging from interactive, desk-top teaching machines to self-standing "mini" computers with built-in terminals, to the much larger IBM 360-type units about the size of two refrigerators;

5) The larger devices are expensive, complex, and not entirely free of maintenance and programming problems. The mini-computers are no more trouble and expense than a video ensemble would be;

6) The skills required for interacting with a programmed computer range from rudimentary reading with touch response to fairly high level reading and typing skills, with the use of some specialized symbols and procedures. Most programs can allow for simple responses not requiring a great deal of keyboard dexterity.

Looking at the negative stereotypes of computer-assisted instruction, in the first place, most computers can deal with textual material in a conventional alphabet as easily as they deal with numbers. You already know this from having read your bank statements, registration forms, etc., which come to you directly from a form of computer print-out. The only difference is that letters require about twice the storage space as numbers. But in machines that can typically store half a million numbers for a single program, the space available is still no problem. Machines can handle words as well as numbers, both in quantity and manipulation.

Generally the textual material used in an instructional program in English is stored and "played back" via the teletype terminal, CRT, or audio device, more or less as a tape recorder would do, but under the control of the automatic sequential program rather than being controlled by someone pusing buttons. A typical exercise might be ten sentences with blanks to fill in. The sentences are presented--printed by the typewriter--one at a time, the machine pauses for the student's reply to be typed in, and the student's answers are evaluated. Generally, unless the material is a test, the computer will immediately tell the student whether the response is correct or not. If it isn't correct, good programs will comment why, differentiating between types of errors: "No, you should have put the past tense, 'waited'. "Are you sure you spelled that right?" "Please check your punctuation." At the end of the exercise, the total score is displayed, and, if more than a threshold number is missed, the student is referred to an additional set of review exercises, possibly including more examples or a review of the rules. Otherwise, the next set of exercises is presented, usually with a somewhat different task, e.g., finding the mistakes in a paragraph and typing in the correct forms. A series of exercises is usually followed by a quiz, passage of which results in successful exit from the program, the quiz score having been recorded in a file for the instructor. A student may generally opt out of the program at other points, if, for some reason, he wants to continue later.

Some programs, such as those written by Ellen Nold at Stanford, are not programs in the conventional sense. That is, the student is given questions designed to provoke longer responses which are only evaluated peripherally. For example, the control program might only look for positive and negative elements. A hypothetical exchange might be:

Computer: Mary, who's sitting next to you?

Mary: I don't know.

Computer: Well, why don't you just describe anyone for me then?

Mary: She's short and fat and she's wearing a wig.

Computer: Give me some more details....

In the first exchange, the computer looks for no(body), I don't ..., etc. If these elements appear, the reply is as indicated. If not, it assumes a name has been given and uses that appropriately in the ensuing exchanges ("Please describe Fred for me"). The last exchange needn't involve any scrutiny of the response by the computer; it is simply a personal-sounding message to evoke responses from the student. In one program, Ellen Nold has the students write a poem about their names, using this technique. This isn't real communication, but how much real communication goes on with a psychoanalyst's "program"? The computer program isn't substituting for a human, but it can certainly effectively simulate human interaction better than the stereotypical machine.[4,5]

Other programs, of a non-linear nature, allow a student to select among a whole set of learning strategies based on the same program. The TICCIT[6] system, originated by Victor Bunderson at Brigham Young University, is a very interesting approach to recognizing individual differences among learners in that it allows the learner to select, for a given instructional module, whether he wants to look at rules, examples, or practice material, or to skip directly to the unit post-test. Of the three types of activities in the unit, the student may select "hard" or "easy" variants. Thus, instead of a series of branches which the student must work through, he is presented with a whole field of alternatives, any or all of which he may skip if he happens to feel prepared to take the final test for that module.

In practice, the human element is quite alive and well in learning centers making use of CAI, both in the programming, which is always an on-going process of successive test and revision, as in any good instructional program, but in the procedures for utilizing "automated" material. Proctors are available to consult with the students over problems they may have with using the materials. In English courses, weekly writing assignments, checked by proctors and graded by instructors are given. Students with special problems will be given group workshops but still the heaviest instructional load is carried by on-line work with the CAI materials.

Although, due to the nature of the terminals, much CAI work tends to involve reading-writing activity, the TICCIT system just described, the PLATO system, and a new system in use at Stanford have audio presentation capability. Thus, audio lectures with written notes can be given via a CAI terminal, as well as other

listening comprehension, spelling lessons, and audio reinforcement (of the "Swell job!" type). At present, several of the systems, including PLATO and TICCIT report reliability problems with delivering randomly accessible audio texts, but these problems are presumably "developmental".

Some of the systems described are expensive. The PLATO terminals, which connect to a remote central computer by telephone line, rent for $1,000 per month each, including the charge for subscribing to the courseware (some 4,000 hours of prepared programs). The TICCIT system in Phoenix, with 128 terminals, costs around $114,000 per year to operate but the price of the terminals, consisting of a small keyboard and a 12" color T.V. set, is only $500.00. Yet many stand-alone computers costing less than $10,000 can do extensive interactive CAI work in language skills, though programs may have to be somewhat shorter than those which can be stored in large devices. Desk top computers can be used for simple presentation and scoring of structured exercises. On campuses with central time-shared computer operation, computer time is often free or very cheap. A typical figure is $5.50 per hour for APL connect time at UCLA, and terminals are frequently shared among departments at a very small rental charge. Computer equipment is one of the few areas where prices of hardware and rentals are actually going down, as can be observed in the spectacular decrease in the price of hand calculators. Last year, a price war among terminal manufacturers brought rental charges of some terminals at UCLA down by about 20%.

And, finally, rather than replacing teachers, a CAI system typically makes teacher time much more valuable by taking over many of the iterative "textbook" tasks of presenting and grading practice material. It allows more teacher time for dealing with individual problems and the major questions of developing a sophisticated writing style.

As with the language lab, some caveats are in order to counter the other extreme of stereotyping, where CAI is seen as the greatest thing since the Wright brothers. Clearly it isn't, or CAI would be in more widespread use. For instance, not one CAI instructional program is in current use at UCLA. The utilization of CAI on other campuses is often accounted for by a history of grantsmanship rather than a general concern for instructional quality. In fact, the financial burden of mounting an extensive CAI system becomes such a dominant issue that the details of intergrating it into a program with adequate space and development and support personnel tend to be subordinated. In the rush of Big System euphoria, moderate-priced alternatives and low-priced mixed media tend to be overlooked. This is known as the All or Nothing stereotype.

Finally, there are the problems of reinforcement, motivation, and quality of programming in computer-assisted instruction, none of which is intrinsic to the use of the computer and all of which depend on the quality of the human programmer. Many learning centers, including one using the TICCIT system described above, report problems with students falling behind in their progress through the supposedly self-motivating modules. This "procrastination" phenomenon seems to plague many types of individualized

systems and bears no relation to the amount of sophistication of hardware being used. Programs reporting the highest proportion of students passing ("exiting") a course within the alloted time span of one quarter or one semester are those which rely on tutors or proctors to facilitate the students' progress through an individualized course. Comparisons with standard expectations are difficult, however, since, while the program in general has to show its effectiveness by granting pass credit to students, the individualized approach claims mastery as the prime exit criterion, leaving time and method of learning as variables. Students must pass modular post-tests at a very high criterion level, typically 85% or better, before they can go on to the next module. They are generally allowed to repeat tests, but only after having gone through the material again, if they fail to achieve pass level the first time. Passage of the tests for all required modules then constitutes passage of the course. As this process may take longer for some learners, carryovers from one term to the next are not uncommon, and generally some sort of incentive in the form of bonus points or counseling is offered to those observed to be making slow progress midway in the course.

Much observational evidence [7,8] seems to indicate that students adapt rather well to CAI. Many of the motivation problems encountered in the use of programmed devices in general are attributable to different styles of learning, and allowing for different learning strategies within a system such as TICCIT may not be a sufficient accomodation. It may be necessary to change the system, to allow the alternative of a lecture/textbook approach to the same topic, as an equivalent credit track. Students would then be able to select themselves into the type of classroom which they felt they could best succeed in, whether it required internal or external motivation.

Other media for simulating a tutoring situation exist and are in much wider use than CAI. Recent materials in audiocassette format show great promise in making a really appropriate use of the medium in teaching English composition. Instead of offering actual interaction with the students, the tutorial cassette simulates such interaction. The following example, from a module on sentence fragments, published by Educulture, follows an explanation of the objectives of the lesson:

> "Lets see if you can find these fragments. Turn to the first exercise in your manual. Got it? Good. When the tone sounds, stop your cassette player, read the directions for the first excercise carefully and then complete it... You're in control of this lesson. You can stop your player and listen to the lesson again as often as you want, and anytime you want...Take your time..."
>
> "Ready to check answers? Good. Number One is a fragment...
>
> ...
>
> If your score is eleven or twelve, you've done quite well. if, however, your score is ten or less, you'll want to turn to the Back Up section at the end of your manual to see how these word groups would appear as correctly written sentences..." [9]

A somewhat fixated teacher might apply the labels of "patronizing", "Skinnerian", or "childish" to the tone of this set of instructions, but many students in a typical basic writing program would prefer this kind of programming to the monotonous and machinelike instructions on most language lab tapes. Here the reinforcement is given consistently, the instructions are clear, while the voices and content are varied for each lesson.

Most responses in the Educulture English series are objective and are written by the student in the workbook. Some responses involve the construction of sentences or sequences of sentences for which alternative answers are given, either on tape or in the answer section at the back of the workbook. More general, uncontrolled responses are elicited for the modules on paragraph structure, where the tone begins to resemble that of Ellen Nold's "creative writing" CAI programs. The audiocassette, too, can be an encouraging facilitator, rather than an adversary.

The question might well arise, why simulate a teacher at all? Why bother to expend the money and time necessary to acquire and organize a library of audiocassettes and other media? Several basic arguments seem to justify the inclusion of self-study modules in anything as complex as a language-teaching program:

1) Time. Based on the premise that the time available for learning a language is limited, a great deal more teacher time can be made available for diagnosing and working with individual and refractory class problems if students can be referred to self-teaching modules for additional work on set, "textbook" parts of the syllabus, such as mechanics, spelling, and many aspects of sentence structure. Related to this is the fact that, although almost all learners can successfully master basic language skills, some take longer than others. Self-study modules allow for this.

2) Depth. With individual modules for specific teaching points, it is possible to expose a learner to a more detailed treatment of that problem than is ever possible with the time and text resources available in a conventional class.

3) Scope. More problems can be treated, since one has not only a class text (formally or informally), but a whole library of high quality, tested subject modules. A class text approach assumes the whole class needs the whole treatment. A modular library allows learners to be treated realistically--as individuals who possess unique sets of learning problems, strategies, attitudes, and assumptions about what they're in the class to accomplish.

As well as taking part in the autotutorial function, cassettes can also perform a valuable media task in providing ESL students with information input on the local culture, much as is done with videotape. Many areas of vérité have not yet been touched, partly, I think, because of

the hegemony of the language lab production stereotype. It insisted on ideal, uncluttered utterances and failed to distinguish between the kinds of variants and background presence which might add meaningful context to the audio impression rather than distracting from it.

Much more is being done these days by teachers who are also interested in breaking down the functional fixations which keep us from making the best use of the tools we've got. Whether the tools are cassette machines or IBM 360s, the human element is always crucial and the creative idea is a priceless commodity.

FOOTNOTES:

[1]"Programmed Logic for Automatic Teaching Operation"

[2]Lotte Marcus, "Instructions for Soap Opera I", (unpub. handout), Salinas, Calif.: English on Wheels, 1977

[3]Ibid.

[4]Ellen W. Nold, "Fear and Trembling: The Humanist Approaches the Computer", National Council of Teachers of English, 1975.

[5]Carl Sagan, "In Praise of Robots", Natural History, 1975, 84, 8-10.

[6]"Timeshared Interactive Computer Controlled Information Television", pronounced "ticket".

[7]Anna Marie Thames, "Computer Assisted Instruction--The Problems and Possibilities", Golden West College, Huntington Beach, Calif., 1971.

[8]Fred Morrison, "The TICCIT Experience at Phoenix College" (unpub. report), 1976.

[9]Gene Kersteins, "Major Sentence Errors" (Lesson 1), English Modular Mini-Course, Santa Monica: Educulture, Inc., 1976.

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